Volumetric Behavior of the Refrigerant Blend R32 - R125

V.P. Tsurbelev, A.J. Grebenkov, and P.M. Klepatsky

Institute of Power Engineering Problems

Sosny, Minsk, Belarus

Volumetric behavior of the refrigerant mixture of HFC32 (difluoromethane) and HFC-125 (pentafluoroethane) have been studied by the method of the constant volume piezometer. As a result of this study the data have been obtained for the composition with mass fraction $W_{HFC32} = 0.43773$ in a range of temperatures (T) from 291 to 399 K, pressures (T) from 1.3 to 8.6 MPa and densities (T) from 0.85x10³ kg/m³ to 0.15x10³ kg/m³. The experimental uncertainties have been estimated to be within t0.02 K for temperature measurements, t0.05% for pressure measurements, t0.1% for density values, and t0.05% for mass fraction.

The experimental results have been received in gas and liquid phases. The coexisting densities and pressures along the saturation curve have been estimated in the temperature range 320 - 350 K. The coefficients of the equations for bubble and dew pressures and the coefficients of the Benedict-Webb-Rubin equation of state have been determined. Comparison between calculated and experimental values has been accomplished and discussed.